

UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

CIVIL ACTION NO. 98-10774-RGS

R.H. MURPHY CO., INC.

v.

ILLINOIS TOOL WORKS, INC.

v.

R.H. MURPHY CO., INC.

FINDINGS OF FACT, CONCLUSIONS OF LAW,
AND ORDER OF JUDGMENT AFTER A TRIAL WITHOUT JURY

January 17, 2006

STEARNS, D.J.

I. BACKGROUND

Plaintiff R.H. Murphy, Inc. (Murphy) is a New Hampshire corporation with its principal place of business in Amherst, New Hampshire. Defendant Illinois Tool Works, Inc. (ITW) is a Delaware corporation with its principal place of business in Glenview, Illinois. Murphy accuses ITW of patent infringement and defamation. After lengthy pretrial proceedings and a hearing pursuant to Markman v. Westview Instruments, Inc., 517 U.S. 370 (1996), the infringement and defamation claims were tried before the court sitting without a jury. The trial, which spanned some thirteen days, was followed by extensive post-trial briefing and two rounds of final argument concluding on May 9, 2005. This opinion memorializes the court's final construction of the pertinent patent claims, its rulings of law, and such findings of fact as are necessary to render final judgment.

The original application for the patent in dispute was filed with the United States Patent and Trademark Office (PTO) on October 15, 1993. The PTO issued United States Letters Patent No. 5,400,904 (the '904 patent) entitled "Tray for Ball Terminal Integrated Circuits" on March 28, 1995. The patent listed Robert H. Murphy (Robert Murphy) and Roy E. Maston, III, as the inventors, and Murphy as their assignee.

Murphy brought suit against ITW for infringement of the '904 patent as originally issued on May 4, 1998. On February 4, 2000, Murphy filed reexamination request No. 90/005,630 with the PTO. On January 16, 2001, the PTO granted Murphy Reexamination Certificate No. 5,400,904 (the '904 reex. patent) canceling claims 1, 2, 6, and 15-18 of the original patent, amending claims 3-5, 7, 9, 11, and 14, and adding new claims 19-22.

Murphy alleges that ITW's carrier trays infringe claims 7, 9, and 11 of the '904 reex. patent.¹ ITW maintains that the asserted claims should be held invalid as being anticipated by prior art, 35 U.S.C. § 102, or as being obvious, 35 U.S.C. § 103, or as being unenforceable because of inequitable conduct on Murphy's part. ITW also denies that its products infringe.

A. The Origins of the '904 Patent

Robert Murphy founded the forerunner to R. H. Murphy Co., Inc., in 1982, under the name MK Rivet, Inc. The company's name was changed to R.H. Murphy in 1985. Robert Murphy is the president and sole shareholder of R.H. Murphy. Roy Maston joined Murphy in 1985 and is the company's design engineer.

¹The three claims as amended are set out in full in the appendix attached to the body of this opinion.

Murphy is a small company that subcontracts all of its manufacturing needs. Among its early product offerings were carrier media for shipping computer chips and components. Murphy's customer base has included, among other major companies, Advanced Micro Devices, Texas Instruments, Motorola, and Hewlett Packard. In early 1989, Murphy developed a storage tray for Texas Instruments to hold pin grid array (PGA) devices.

In January of 1993, Jeffrey Miks, a Motorola engineer, approached Murphy about designing a tray ultimately intended to store ball grid array (BGA) devices. Robert Murphy and Maston made preliminary sketches of a tray design, which were forwarded to Miks. On May 3, 1993, Motorola submitted a purchase order for 1,000 trays based on Murphy's most recent design. The following day, May 4, 1993, Murphy received a fax from Miks requesting several design changes. On May 5, 1993, Miks sent another fax suggesting a flipable tray in which a BGA device could be captured in either a terminals up or a terminals down position.

Miks testified that he conceived the idea of an interlocking flipable tray on March 11, 1993, and that he communicated the idea to Robert Murphy that same day. On or about May 4, 1993, Miks pasted a drawing of an interlocking tray into his laboratory notebook pre-dated to March 11, 1993. (The drawing was included in the fax Miks sent to Murphy on May 5, 1993). Miks sincerely believes that the concept of interengaging stabilizing means enabling flipability was stolen from him by Murphy.

On May 25, 1993, Miks completed a Motorola patent disclosure form. Shortly

thereafter, he told Robert Murphy that he had done so.² In a telephone conversation on August 3, 1993, Miks told Robert Murphy that Motorola had decided to apply for a patent. Robert Murphy suggested to Miks that they consider a joint patent application. In a subsequent conversation on Friday, August 6, 1993, Miks told Robert Murphy that he considered himself the sole inventor of the interlocking flipable tray. On Monday, August 9, 1993, Robert Murphy made a patent disclosure to his attorneys. The '904 patent application, which listed Maston rather than Miks as the coinventor, was filed on October 15, 1993. Robert Murphy did not inform Miks that he had applied for the '904 patent until later that month. In October of 1993, Murphy offered to sell trays to Motorola based on the '904 patent design. Motorola instead purchased BGA trays from ITW.

B. The Defamation Claim

On January 6, 2000, ITW's patent counsel, Gerald Levy, wrote to Shannon Reading, an ITW executive, stating his opinion that the (then unexamined) '904 patent was invalid. The letter was subsequently circulated to customers of ITW, some of whom were also Murphy customers. Murphy alleges that three statements in the letter are defamatory: (1) that "ITW/Camtex has sold [a flipable/stackable] tray (for QFP) chips more than one year prior to the effective filing date of the Murphy patent and such sale would stand as an absolute bar of the Murphy claim against the ITW design;" (2) that "ITW/Camtex offered to sell a flipable/stackable tray specifically for BGA chips at least as early as February 11, 1992 which also stands as a statutory bar to the Murphy patent;" and (3) that "any

²Motorola ultimately decided against applying for a patent on Miks' claimed invention for reasons that are not clear from the record.

invention disclosed in the Murphy patent did not originate with Murphy but with engineers at Motorola with whom Murphy was working.”

Under New Hampshire law,

for actionable libel, there must be publication of a false statement of fact, that tends to lower the plaintiff in the esteem of any substantial and respectable group of people. Conversely, a statement of opinion is not actionable, unless it may reasonably be understood to imply the existence of defamatory fact as the basis for the opinion. Whether a given statement can be read as being or implying an actionable statement of fact is itself a question of law to be determined by the trial court in the first instance, considering the context of the publication as a whole.

Nash v. Keene Pub. Corp., 498 A.2d 348, 351-352 (N.H. 1985) (internal citations omitted).³

At the conclusion of the trial, the court indicated that it found as a matter of law that the first two statements questioning the validity of the ‘904 patent were not susceptible of a defamatory meaning “any more than [Murphy’s] accusations of infringement leveled at ITW could be construed to be defamatory.”⁴ The court indicated that the only statement that could possibly be considered defamatory was the third statement implying that Murphy had stolen the basic idea of the ‘904 patent from Miks and other engineers at Motorola. However, having heard Miks’ testimony at trial, the court stated that it saw “nothing that should have alerted Mr. Levy to any deficit in Mr. Miks’ personal account of his role,

³The parties largely assume that New Hampshire law applies as any damage to Murphy would presumably have been felt in the forum where Murphy does business.

⁴Levy based the statement regarding the on-sale bar on the ITW/Camtex-544 tray, which Levy believed anticipated claims 1 and 6 of the original ‘904 patent (the claims that had been asserted against ITW at the time the letter was written). In fact, as ITW points out, during the reexamination claims 1 and 6 were rejected by the PTO in light of prior art. Rod Crisp, ITW’s expert witness, and a designer of the ITW/Camtex-562 tray, testified that in early 1992, he conceived and sketched a flipable/stackable BGA tray system that Camtex offered for sale to Motorola on February 11, 1992.

whether it was accurate or not, in the development of the concept that became the '904 patent. Indeed, it is clear from the testimony at trial that Mr. Miks still sincerely believes that the invention is largely his.”⁵ The court did, however, agree to defer a final ruling on the defamation claim until after post-trial briefing was complete.

The briefing served to correct a legal error on the court’s part. It had stated at the conclusion of the trial that Duchesnaye v. Munro Enterprises, Inc., 480 A.2d 123 (N.H. 1984), precluded an award of presumed damages based on mere negligence on Levy’s part. Murphy points out that New Hampshire law permits the recovery of presumed damages in business defamation cases without proof of knowledge of falsity or reckless disregard for the truth where a defamatory statement involves a matter of purely private concern. See Touma v. St. Mary's Bank, 712 A.2d 619, 622 (N. H. 1998). Assuming that the statements about Miks’ role in conceiving the '904 patent do involve matters of private concern (ITW makes the forceful argument that statements concerning a patent’s validity by their very nature touch on a matter of public concern), the court’s view is unaltered. There is no factual basis for a finding that Levy acted with a reckless or negligent disregard for the truth.

II. CLAIM CONSTRUCTION

⁵The “did not originate” statement must be read in its larger context. Levy went on in the letter to explain that the basis of the statement was a sworn deposition of Miks in which Miks stated “that in or about March of 1993 he disclosed the idea of a flipable/stackable BGA tray to Murphy and sent a sketch of such a tray to Murphy. Miks went on to testify that he ‘felt the invention [of the BGA tray] was stolen [from him by Murphy].’ In support of his story, Miks has provided us with a page from his Motorola laboratory notebook that is dated March 13, 1993 as well as an invention disclosure document that was submitted to Motorola and is witnessed and signed by other Motorola employees.”

Construction of the following disputed terms the court deems necessary to a resolution of the case: (1) “framework means;” (2) “first and second support means;” (3) “first and second stabilizing means;” (4) “intersecting wall means;” (5) “complementary registration means for aligning;” (6) “interengage;” (7) “accessible from said first and second opposite sides;” and (8) “central” and “centrally.” Based on the evidence adduced at a Markman hearing and a trial without jury, as well as the briefs and arguments of the parties, the court essentially adopts Murphy’s construction of the relevant terms.⁶ However construed, ITW argues that the ‘904 patent should be invalidated under 35 U.S.C. § 103 as obvious in light of prior art trays ITW-526 (‘526), ITW-562 (‘562),⁷ and 3M. The court for reasons that will be explained concludes that the prior art trays render the ‘904 patent obvious and therefore invalid.

A. Legal Considerations

Infringement analysis begins with the construction of the patent claims alleged to have been infringed. Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). Claim construction is a matter of law for the court’s determination. Markman v. Westview Instruments, Inc., 52 F.3d 967, 970-971 (Fed. Cir. 1995) (en banc), aff’d, 517 U.S. 370 (1996).

⁶As is apparent, many of the disputed terms are expressed as means-plus-function claims, while others are expressed as conventional patent claims. Each set of claims requires application of different rules of construction. While a number of other terms are nominated by the parties for construction, “only those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.” Vivid Techs., Inc. v. Am. Science & Eng’g, Inc., 200 F.3d 795, 803 (Fed. Cir. 1999).

⁷The ITW-562 tray is the progenitor of the components of the ITW trays that are accused of infringement.

Under the doctrine of claim construction, the words of a claim “are generally given their ordinary and customary meaning,” which is the “meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” Phillips v. AWH Corp., 415 F.3d 1303, 1312, 1313 (Fed. Cir. 2005), citing Vitronics Corp. v. Conceptor, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). The “claims ‘must be read in view of the specification, of which they are part.’” Phillips, 415 F.3d at 1315, quoting Markman, 52 F.3d at 979. The “specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” Phillips, 415 F.3d at 1315, quoting Vitronics Corp., 90 F.3d at 1582.

There is, however, an important caveat. “[L]imitations appearing in the specification will not be read into claims” In re Cruciferous Sprout Litig., 301 F.3d 1343, 1348 (Fed. Cir. 2002), quoting Intervet Am., Inc. v. Kee-Vet Labs, Inc., 887 F.2d 1050, 1053 (Fed. Cir. 1989). “It is axiomatic that ‘[c]laims, not the specification embodiments, define the scope of protection.’” Dow Chem. Co. v. Sumitomo Chem. Co., Ltd., 257 F.3d 1364, 1378 (Fed. Cir. 2001), quoting American Permahedge, Inc. v. Barcana, Inc. 105 F.3d 1441, 1444 (Fed. Cir. 1997). “This court has cautioned against limiting the claimed invention to preferred embodiments or specific examples in the specification.” Vulcan Eng'g Co. v. Fata Aluminum, Inc., 278 F.3d 1366, 1376 (Fed. Cir. 2002), quoting Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558, 1563 (Fed. Cir. 1986). “Specifications teach. Claims claim.” SRI Int'l v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1121 n.14 (Fed. Cir. 1987).

“[T]he distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to apply in practice.” Phillips, 415 F.3d at 1323. See Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1186-1187 (Fed. Cir. 1998) (“[T]here is sometimes a fine line between reading a claim in light of the specification, and reading a limitation into the claim from the specification.”). “However, the line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court’s focus remains on understanding how a person of ordinary skill in the art would understand the claim terms. For instance, although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.” Phillips, 415 F.3d at 1323.

“In addition to consulting the specification, . . . a court ‘should also consider the patent’s prosecution history, if it is in evidence.’” Phillips, 415 F.3d at 1317, quoting Markman, 52 F.3d at 890. The prosecution history “often lacks the clarity of the specification and thus is less useful for claim construction purposes,” but “[n]onetheless, [it] can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” Phillips, 415 F.3d at 1317.

“[E]xtrinsic evidence may be useful to the court, but it is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” Id. at 1319.

[E]xtrinsic evidence in the form of expert testimony can be useful to a court for a variety of purposes, such as to provide background on the technology at issue, to explain how the invention works, to ensure that the court's understanding of the technical aspects of the patent is consistent with that of a person of skill in the art, or to establish that a particular term in the patent or the prior art has a particular meaning in the pertinent field.

Id. at 1318. “However, conclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court.” Id. Moreover, Phillips warns against relying on extrinsic evidence such as dictionaries, treatises, and encyclopedias.

The main problem with . . . the dictionary . . . is that it focuses the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent [T]he heavy reliance on the dictionary divorced from the intrinsic evidence risks transforming the meaning of the claim term to the artisan to the meaning of the term in the abstract, out of its particular context, which is the specification. . . . [T]he use of the dictionary may extend patent protection beyond what should properly be afforded by the inventor's patent. . . . The resulting definitions therefore do not necessarily reflect the inventor's goal of distinctly setting forth his invention as a person of ordinary skill in that particular art would understand it. . . . Even technical dictionaries or treatises . . . may suffer from some of these deficiencies. There is no guarantee that a term is used in the same way in a treatise as it would be by the patentee. In fact, discrepancies between the patent and treatises are apt to be common A claim should not rise or fall based upon the preferences of a particular dictionary editor

Id. at 1321-1322.

B. Means-Plus-Function Claims

Where a claim recites a “means” or “step,” there is a presumption that 35 U.S.C. § 112, ¶ 6, applies.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

In essence, § 112, ¶ 6, simplifies the expository burden on a patentee by allowing a patent applicant “to recite a function to be performed as a claim limitation rather than reciting structure or materials for performing that function.” Omega Eng’g, Inc. v. Raytek Corp., 334 F.3d 1314, 1321 (Fed. Cir. 2003). Construing a “means-plus-function” limitation under § 112, ¶ 6, is a two-step process. First, the court must identify the claimed function. Second, the court must identify the corresponding structure in the written description that performs that function. JVW Enterprises, Inc. v. Interact Accessories, Inc., 424 F.3d 1324, 1330 (Fed. Cir. 2005); Micro Chem., Inc. v. Great Plains Chem. Co., Inc., 194 F.3d 1250, 1258 (Fed. Cir. 1999).

While a means-plus-function claim is not boundless, “[t]he statute does not permit limitation of a means-plus-function claim by adopting a function different from that explicitly recited in the claim. Nor does the statute permit incorporation of structure from the written description beyond that necessary to perform the claimed function.” Micro-Chem., 194 F.3d at 1258 (the trial court erred “both by incorporating structure beyond that necessary to perform the claimed functions and by incorporating unrecited functional limitations into the claims.”); JVW Enterprises, 424 F.3d at 1331 (the trial court erred by importing the functions of a working device into the specific claims, rather than reading the claims for their meaning independent of any working embodiment.).

“In order to qualify as corresponding the structure must not only perform the claimed function, but the specification must clearly associate the structure with performance of the function.” JVW Enterprises, 424 F.3d at 1332, quoting Cardiac Pacemakers, Inc. v. St. Jude Med., Inc., 296 F.3d 1106, 1113 (Fed. Cir. 2002). While the

corresponding structure “need not include all things necessary to enable the claimed invention to work . . . [the] corresponding structure must include all structure that actually performs the recited function.” Id. at 1119.

“Because structural equivalents under § 112, ¶ 6 are included within literal infringement of means-plus-function claims, ‘the court must compare the accused structure *with the disclosed structure*, and must find equivalent *structure* as well as *identity* of claimed *function* for the structure.’” Frank’s Casing Crew & Rental Tools, Inc. v. Weatherford Int’l, Inc., 389 F.3d 1370, 1377 (Fed. Cir. 2004) (citation omitted), quoting Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934 (Fed. Cir. 1987). The equivalence analysis under § 112, ¶ 6 involves determining whether the “equivalent structure performs the claimed function in substantially the same way to achieve substantially the same result as the corresponding structure described in the specification.” Odetics, Inc. v. Storage Tech. Corp., 185 F.3d 1259, 1267 (Fed. Cir. 1999). The Federal Circuit “has on several occasions compared statutory equivalence under § 112, ¶ 6 and the judicial doctrine of equivalents . . . and indicated that the tests for equivalence under § 112, ¶ 6 and the doctrine of equivalents are ‘closely related,’ involving ‘similar analyses of insubstantiality of the differences.’” IMS Tech., Inc. v. Haas Automation, Inc., 206 F.3d 1422, 1435 (Fed. Cir. 2000), quoting Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus., Inc., 145 F.3d 1303, 1310 (Fed. Cir. 1998). See also Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1043 (Fed. Cir. 1993). (“The word ‘equivalent’ in section 112 invokes the familiar concept of an insubstantial change which adds nothing of significance.”).

“The primary difference between structural equivalents under § 112, ¶ 6 and the doctrine of equivalents is a question of timing.” Frank’s Casing Crew, 389 F.3d at 1378, citing Al-Site Corp. v. VSI Int’l, Inc., 174 F.3d 1308, 1321 n.2 (Fed. Cir. 1999). The § 112, ¶ 6 structural equivalents analysis applies if the proposed equivalent arose at a time before the filing of the patent. If the equivalent structure arose after patent filing, “a non-textual infringement analysis proceeds under the doctrine of equivalents.” Id., 389 F.3d at 1378.⁸

“In light of the similarity of the tests for equivalence under § 112, ¶ 6 and the doctrine of equivalents, the context of the invention should be considered when performing a § 112, ¶ 6 equivalence analysis just as it is in a doctrine of equivalents determination.” IMS Tech., 206 F.3d at 1436. See also Texas Instruments, 805 F.2d at 1563 (“It has long been recognized that the range of permissible equivalents depends upon the extent and nature of the invention.”). “More particularly, when in a claimed ‘means’ limitation the disclosed physical structure is of little or no importance to the claimed invention, there may be a broader range of equivalent structures than if the physical characteristics of the structure are critical in performing the claimed function in the context of the claimed invention.” IMS Tech., 206 F.3d at 1436.

Therefore, “a rigid comparison of physical structures in a vacuum may be inappropriate in a particular case.” IMS Tech., 206 F.3d at 1436. Although § 112, ¶ 6 requires two structures to be equivalent, “it does not require them to be ‘structurally

⁸By way of illustration, because the disputed JEDEC chamfered corner was in use prior to the filing of the ‘904 patent, the court need not conduct an analysis under the doctrine of equivalents.

equivalent,' i.e., it does not mandate an equivalency comparison that necessarily focuses heavily or exclusively on physical structure.” Utah Med. Prods., Inc. v. Graphic Controls Corp., 350 F.3d 1376, 1384 (Fed. Cir. 2003), quoting IMS Tech., 206 F.3d at 1436. “The difference between ‘equivalent structures’ and ‘structural equivalents’ can be demonstrated with a simple example. . . . A claim includes part A, part B, and ‘means for securing parts A and B together in a fixed relationship.’ The written description discloses that parts A and B are made of wood and are secured together by nails. For purposes of the invention, it does not matter how parts A and B are secured; nails are not a critical part of the invention. A screw is not a nail, but for purposes of § 112, ¶ 6, it is equivalent structure in the context of the invention, though it is not the ‘structural equivalent’ of a nail.” Id. at 1436 n.3.

Evidence of whether one of ordinary skill in the art would have recognized the interchangeability of the two structures for performing the claimed function should also be considered in a § 112, ¶ 6 equivalence determination. IMS Tech., 206 F.3d at 1437. See Al-Site, 174 F.3d at 1315-1317 (affirming a jury verdict of infringement based on expert testimony regarding the known interchangeability of glue and a rivet as a “fastening means” for an eyeglass hanger tag). Moreover, “[t]hat two structures may perform unrelated – and, more to the point, unclaimed – functions differently or not at all is simply not pertinent to the measure of § 112, ¶ 6 equivalents.” Odetics, 185 F.3d at 1270 (a “bin array” structure consisting of rod, bin, and pins is not precluded from being equivalent to the “rotary means” structure consisting of rod, bin, and gears “by the fact that the ‘bin array’ structure would not be able to perform unrelated functions, such as ‘meshing with

a gear motor”); Chiuminatta, 145 F.3d at 1308 (“[S]tructure that ‘reduces wobbling’ and ‘supports the weight of the cutting blade’ is unrelated to the claimed function of ‘supporting the surface of the concrete’ and accordingly are not to be read as limiting the scope of the means clause.”).

III. CONSTRUCTION OF DISPUTED TERMS

A. Framework Means

The first dispute concerns the meaning of the term “framework means” as used in claims 7, 9, and 11. The function assigned to the framework means is that of “defining a storage pocket area for each integrated circuit component.” ‘904 reex. patent, col. 3, ll. 64-65. Murphy asks the court to construe this phrase as “delineating the outline or form of a distinct section of a tray, i.e., a receptacle or cavity for holding an integrated circuit component.”⁹ ITW construes the phrase to mean “a lattice-like structure made up of intersecting walls that extend transverse to the planes on which integrated circuit components are to be supported, and the structural equivalents to a lattice-like structure of intersecting walls.”¹⁰

The specification of the ‘904 patent describes the “framework means” as defining “a storage pocket area for each integrated circuit component and locat[ing] each integrated circuit component at and stabiliz[ing] the position of the integrated circuit component within

⁹Murphy Response to ITW’s Proposed Findings of Fact and Conclusions of Law (Murphy Response), at 11.

¹⁰ITW’s Proposed Findings of Fact and Conclusions of Law (PFF&CL), at 75. Murphy complains repeatedly that an equivalent structure need not be a structural equivalent (ITW’s preferred terminology). The difference is significant.

a corresponding storage pocket area.” ‘904 patent, col. 4, ll. 53-57. Murphy argues that “the structures that define the storage pocket areas are the surfaces on the walls that are substantially perpendicular to the support planes of the tray and that are arranged in a rectangular or intersecting array on both sides of the tray.”¹¹ The “framework means” element, according to Murphy, covers not only trays that have wall surfaces but also trays with any equivalent perpendicular surface. Murphy urges the court not to limit the term “framework means” to the specific lattice-like structure disclosed in the embodiment (as ITW advocates), but to define “framework means” as simply a structural surface demarcating the dimensions of the pocket area. Murphy makes a convincing argument that the only element of the identified structure necessary to perform that function are intersecting perpendicular surfaces forming a rectangle. ITW’s proposed definition imports components of the structure of the preferred embodiment that are beyond those necessary to perform the claimed function. See Micro Chem., 194 F.3d at 1258. The court will therefore adopt Murphy’s construction.

B. First and Second Support Means

The function of the “first support means” is to define “a first support plane for engaging the terminal side of the integrated circuit component.” See ‘904 reex. patent , col. 4, ll. 2-4; col. 5, ll. 2-4. The function of the “second support means” is to define “a second support plane that is parallel to the first support plane for engaging the other side of the integrated circuit component.” Id., col. 4, ll. 8-11; col. 5, ll. 8-11. ITW argues that the only structures disclosed in the specification that perform the function of supporting the

¹¹Murphy Response, at 11.

component are the tabs shown in the embodiment.¹² ITW thus urges the court to define the “first and second support means” as “tabs that extend inwardly from and transverse to the walls of the framework, and structural equivalents to those tabs.”¹³

Murphy reads the phrase “support means” in essentially the same way as does ITW. Murphy argues that the function of the “first support means” is to define “a support plane that engages one side of the integrated circuit component in such a way that the support means contacts the integrated circuit component near its edges so as not to damage the solder ball leads of the same,” while the “second support means” defines “a second support plane that is parallel to and spaced from said first support plane and that engages the other side of the integrated circuit component.”¹⁴ Where Murphy differs from ITW is over ITW’s attempt to limit the structure performing the desired function to “tabs” and their structural equivalents. As Murphy argues, the size or shape of the tabs is not significant, but that “[o]ther structures that have surfaces that are parallel to the plane of the tray and that extend inwardly into the pocket would be equivalent structures.”¹⁵ For Murphy the operative word in defining the support means is not “tab,” but “surface.”¹⁶ By limiting the first and second support means to tabs or their structural equivalents, the court would again be importing a structure from the embodiment that is not necessary to perform

¹²ITW’s PFF&CL, at 76-77.

¹³ITW’s PFF&CL, at 77.

¹⁴Murphy Markman Hearing Presentation (MMHP), at 19, 21.

¹⁵Murphy Response, at 14.

¹⁶See MMHP, at 19.

the claimed function. Because the court believes that ITW's proposed definition incorporates superfluous elements of the structure disclosed in the embodiment, the court will adopt Murphy's construction of the term "support means."¹⁷

C. First and Second Stabilizing Means

The function of the "stabilizing means" is to capture the integrated circuit component in the storage pocket area when it is inserted from the first or second sides of the framework means onto the support means to prevent the component from moving in the plane transverse to the framework. See '904 reex. patent , col. 4, ll.18-31. The structures identified by ITW as performing that function are the corner and central wall extensions and the corresponding recesses (the central portions) that mesh to form a continuous wall that prevents the integrated circuit component from shifting on either the X or Y axis lateral to the support planes.¹⁸ ITW argues that the "first stabilizing means" should accordingly be defined as "[t]he chamfered extensions of the walls at the corners thereof that extend in a first direction and structural equivalents to those corner extensions," and that the "second stabilizing means" should be defined as "[t]he central extensions of the walls, in the shape of a 'tongue'; that extend from the center of each wall, thereby being centrally located and that extend in the direction opposite to the direction of the corner extensions which when mated between corner extensions of an adjacent tray form an essentially

¹⁷While it is true that during the reexamination (as ITW points out), Murphy described the support means "as comprising a plurality of discrete spaced tabs," the statement was made in reference to dependent claim 5. Limitations in a dependent claim "are not to be read into the independent claim from which they depend." Karlin Tech., Inc. v. Surgical Dynamics, Inc., 177 F.3d 968, 972 (Fed. Cir. 1999).

¹⁸ITW's PFF&CL, at 78, 79.

continuous wall surface.”¹⁹ ITW again relies on the embodiment disclosed in the specification of the ‘904 patent.²⁰

Murphy agrees that the function of the “first and second stabilizing means” is to capture the integrated circuit component in the storage pocket area and limit its motion in a plane transverse to the framework means and the storage pocket area.²¹ However, Murphy insists that ITW is attempting to import features of the structures disclosed in the embodiment that are not necessary to perform the claimed function (namely, chamfers on the corner extensions and tongue-shaped central extensions mating with the corner extensions to form a continuous wall surface).²² “Once again, the size and shape of the plastic structures of the tray that form these surfaces can vary. Other surfaces that are substantially perpendicular to the support planes and that contact the edges of the device

¹⁹ITW’s PFF&CL, at 79-80. The description of the central extension as being in the shape of a “tongue” is derived from the ‘904 patent at col. 6, ll. 51-52.

²⁰In its PFF&CL, ITW characterizes Thomas Solon, Murphy’s expert, as testifying that the function of the central extensions is to protect the solder balls of the circuit chip. This is not an accurate rendering of Solon’s testimony. Solon testified that if the central extension rose above the surface of the chip, protection is a function that would be performed, a desirable function but not one that has any relation to stabilization. The reason the dispute has some significance stems from the fact that most of the accused ITW trays do not have a similar protective mechanism.

²¹MMHP, at 23, 26.

²²I agree with Murphy that while chamfers facilitate the interengagement of the stacked trays, they are not a necessary component of the structure performing the stabilizing function. “The chamfers on the corner extensions in the disclosed embodiment of the ‘904 patent are perpendicular to the edges of the device in the storage pocket areas. These chamfers never contact the device and perform no role in limiting the motion of the device parallel to the support planes.” Murphy Response, at 18.

would perform exactly the same function, and achieve exactly the same result.”²³ See Omega, 334 F.3d at 1322. “First stabilizing means” according to Murphy should not be read to refer exclusively to corner extensions of the walls, but rather to “either corner extensions of the walls or tongue-like extensions of the walls that extend in a first direction.”²⁴ Similarly, the second stabilizing means cannot be limited to “tongue-like” extensions of the walls and must instead be read to include “either tongue-like extensions of the walls or the corner extensions of the walls that extend in a direction opposite to the direction of the extensions of the walls of the first stabilizing means.”^{25, 26}

The court has previously held that the stabilizing means is “formed with said framework means, and not with structurally divorced tabs or other protuberances. Thus,

²³Murphy Response, at 18.

²⁴MMHP, at 25.

²⁵MMHP, at 28. The point is a little obscure, but Murphy also observes that the literal language of the claims does not require that the first stabilizing means consist of corner extensions and the second of central extensions instead of the reverse. Murphy Response, at 19.

²⁶Murphy argues that the “restraining” posts of the ITW accused trays are equivalent to the first and second stabilizing means of the ‘904 tray because they restrain lateral movement of the integrated circuit in the storage pocket area. Murphy’s PFF&CL, at 23. Specifically, Murphy identifies the “corner posts” located at the corners of each storage pocket in the ITW trays as equivalent to the first stabilizing means, that is, the “corner extensions” of the ‘904 trays. Murphy defines the posts located on the opposite sides of the ITW trays as “central posts,” because they are spaced “centrally” between the corners. They are therefore equivalent to the “central extensions,” or second stabilizing means of the ‘904 patent. Murphy’s PFF&CL, at 22. (Murphy construes “central” to mean between or intermediate to the corner extensions, and not at the exact center of the wall means, hence the “central extensions” can be located anywhere along the wall so long as they lie between the corner extensions on the opposite side of an adjacent stacked tray). Murphy’s Response, at 42.

the first and second stabilizing means are components of the framework means and not separate or independent structures as ITW's construction requires."²⁷ Consistent with its prior ruling, the court will adopt Murphy's construction of the term "stabilizing means."

D. Intersecting Wall Means

ITW and Murphy agree that the function of the intersecting wall means is to define the limits of the storage pocket areas between the stacked trays. ITW argues that the structures that perform this function are "[w]alls surrounding each pocket having chamfered corner extensions separated by a recess extending in one direction and walls with chamfered tongue portions, located centrally, extending centrally of each wall between recesses in the opposite direction to thereby permit the tongue and corner extensions to interengage to form an essentially continuous wall structure about each pocket and structural equivalents to those walls."²⁸ Murphy counters that "there is nothing in the claim language that requires that the interengagement of the extensions from one tray with those of an adjacent stacked tray be such that they 'form a continuous wall structure about each pocket.' In fact, the claim language only requires that the interengaged extensions define the limits of the storage pocket area . . . and can do this without touching or forming a continuous wall structure."²⁹ Murphy further contends that "chamfering has nothing to do with, and is not a structure necessary to perform, the recited function of this means, i.e.,

²⁷Memorandum and Order on Summary Judgment, November 5, 2003.

²⁸ITW's PFF&CL, at 81.

²⁹MMHP at 29-30.

to set the limits of the storage pocket area.”³⁰ Like Murphy, the court sees nothing in the specification linking chamfered edges and continuous wall surfaces to the function of defining the limits of the storage pocket area. See Omega, 334 F.3d at 1322.

Moreover, “the presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.” Phillips, 415 F.3d at 1315. Here, the limitations at issue – chamfered edges and extended wall surfaces – were expressly incorporated in dependent claims 10 and 15 of the original ‘904 patent and as a result are presumptively not included in independent claims 7, 9, and 11 of the reexamined patent.³¹ Accordingly, the court adopts Murphy’s construction that the only structures necessary to perform the function of defining the limits of a storage pocket area are “the intersecting walls surrounding each pocket that support the corner extensions extending in one direction and the central extensions in the opposite direction thereby permitting the central extensions of the walls of one tray to interengage with the corner extensions of the walls of another tray when they are stacked to define the limits of the storage pocket area.”³²

E. Complementary Registration Means for Aligning

The “complementary registration means for aligning” described in claims 7 and 9

³⁰MMHP, at 30.

³¹Claims 10 and 15 of the ‘904 patent provide: “a tray system for storing integrated circuit components . . . wherein each of said corner and central extensions include chamfered edges that cooperate during the stacking . . . for forming an extended wall surface. . . .” Col. 10, ll. 28-33; Col. 11, ll. 5-11.

³²MMHP, at 30-31.

of the '904 patent has the function of "aligning said first and second trays in the stacked relationship." '904 reex. patent, col. 4, ll. 33-35. ITW argues vigorously that the only structure linked in the specification to the recited function are the "[b]osses and receptacles as shown in the patent as Elements 110-117 some of which have different shapes so they can mate in only one orientation, and structural equivalents to such bosses and receptacles."^{33,34} ITW specifically relies on the following sentence in the specification: "Certain of the bosses can have differing shapes to assure registration and appropriate alignment of adjacent trays. " '904 patent, col. 7, ll. 46-48.

Murphy contends that the function of the complementary registration means is not to prevent the misalignment of trays, but merely to provide a means of allowing the trays to be aligned in a stacked relationship.³⁵ Murphy argues that in addition to bosses and complementary receptacles, the JEDEC chamfered corners³⁶ are corresponding structures that perform the claimed function of aligning the trays in the stacked relationship, and

³³ITW's PFF&CL, at 80. It is undisputed that none of the accused ITW trays incorporate bosses and receptacles or their structural equivalents.

³⁴Perhaps more accurately, ITW argues that this is the only structure that performs the function well, a point that Maston conceded in his testimony. As was illustrated at trial, the chamfered corners will not prevent the inattentive misalignment of stacked trays, while the bosses and receptacles will not prevent misstacking if the trays are physically forced together.

³⁵Murphy Response, at 22; MMHP, at 32.

³⁶The JEDEC chamfered corner is an industry standard which Murphy (appropriately) makes no claim to have invented. Cf. Micro Chem., 194 F.3d at 1259 - 1260 ("Claim limitations may, and often do, read on the prior art, particularly in combination [claims]."). On the other hand, as ITW points out, Murphy never identified the JEDEC corner to the PTO as a corresponding structure.

would be recognized as such by those skilled in the art reading the '904 patent.³⁷ Thomas Solon, Murphy's expert, identified the chamfered corners illustrated in Figures 1 and 2 as the embodiment of the complementary registration means recited in claim 7. ITW has a strong argument that the specification does not clearly associate chamfered corners with the aligning function (they are neither numbered nor described in the specification), although as Murphy points out, a drawing may satisfy the written description requirement of § 112, ¶ 1.³⁸ See Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1564 (Fed. Cir. 1991). Murphy's best evidence is a JEDEC user survey, acknowledged by ITW's expert Rod Crisp, showing that a majority of industry respondents stated that they relied on the chamfered corners as a visual and mechanical means of aligning and registering stacked trays.

However desirable in concept, the preventing of the stacking of the trays in a misaligned orientation is not a function recited in the claims. See Generation II Orthotics, Inc. v. Med. Tech., Inc., 263 F.3d 1356, 1364-1365 (Fed. Cir. 2001) ("When construing the functional statement in a means-plus-function limitation, we must take great care not to impermissibly limit the function by adopting a function different from that explicitly recited in the claim."). While the issue is close, the court will adopt Murphy's construction of the phrase "complementary registration means" to include the JEDEC corners in addition to

³⁷Murphy Response, at 22. ITW's expert witness, Rod Crisp, testified that the JEDEC chamfered corner is principally intended to enable the orientation of the circuit component device within the tray. All of the accused ITW trays have JEDEC chamfered corners.

³⁸Chamfered corners are depicted in Figures 1 through 4.

bosses and receptacles as the performing structures.

F. Interengage

ITW asks the court to construe the term “interengage” as “the activity by which the chamfered central [tongue-shaped] extensions mesh into their associated recesses between chamfered corner extensions so as to form an essentially continuous wall surface surrounding each pocket.”³⁹ ITW relies on the following portions of the specification to support its proffered claim construction.

Corner extensions 100 and 101 on the tray 10A interengage recesses 102 and 103 on the tray 10. These corner extensions extend vertically down past the integrated circuit. . . . A central extension or tongue 104, corresponding to the central extensions 81, extend upwardly into a recess 105 formed in th tray 10a that corresponds to the recess 84. . . . Consequently, each of the wall portions . . . form an essentially continuous wall surface.

‘904 patent, col. 7, ll. 13-26. ITW also looks to dictionary definitions for support, arguing that the standard dictionary synonym for “interengage” is to “mesh” in the sense of fitting tightly together.⁴⁰ While that is true, such extrinsic evidence “is unlikely to result in reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” Phillips, 415 F.3d at 1319.

Murphy defines “interengagement” to mean the “passing of a part of one tray by a part of an adjacent stacked tray in substantially the same plane perpendicular to the plane

³⁹ITW’s PFF&CL, at 87.

⁴⁰ITW’s PFF&CL, at 85. Seven separate dictionaries are listed in ITW’s Table of Authorities.

of the stacked trays.”⁴¹ Murphy argues that the central and corner extensions of the mated trays need not have chamfered edges and need not “mesh,” that is, interlock to form an “essentially continuous wall surface” to perform the stabilizing function.⁴² Murphy contends that the claims of the ‘904 patent are not limited to specific structures and that “there can be a gap between the extensions and still be interengagement”⁴³ and that removing plastic material from the center of the wall would not preclude the wall from stabilizing the component.⁴⁴ Although the accused ITW trays lack a tongue and groove feature similar to that created by the central extension and corresponding central recess in the ‘904 tray, Murphy argues that the ITW trays interengage and have intersecting wall means because the “corner posts” and “central posts” of the accused trays perform the identical function of limiting the storage pocket area and capturing and stabilizing the integrated circuit

⁴¹Murphy Response, at 27.

⁴²In ITW’s view, the concepts of “meshing” and the structural element of chamfered edges are inseparable. ITW points to the teaching of the specification that the chamfered edges “facilitate the interengagement of corner extensions and tongue portions.” ‘904 patent, col. 7, ll. 5-6. According to ITW, the only conceivable purpose of the chamfered edges is to guide the central extensions into the recesses between the corner extensions. ITW Reply, at 15. As ITW persuasively argues, Murphy’s rejection of a concept of “meshing” in favor of parts passing in “essentially the same plane” is intended to capture the stabilizing means of the ITW-526 and ITW-562 trays.

⁴³Rod Crisp, ITW’s expert, provided this support for Murphy’s position. “[T]o interengage two features, you have to bring them together. Does that mean they absolutely must sit together with no airspace? No. We know if that was to happen things would freeze together, but it means they come in the proximity of one another. So there can be some gap and still be interengaged.” Markman Hearing Tr., Nov. 23, 2003, at 151; Murphy Response, at 44.

⁴⁴Murphy’s PFF&CL, at 23.

component between the stacked trays.⁴⁵ In other words, “cosmetic differences in the appearance of the ITW trays are not enough to avoid infringement.”⁴⁶

The court agrees with Murphy to a point. The prior art trays ‘562 and ‘526 have “intersecting wall means” defining the limits of the storage pocket area. The “central posts” and “corner posts” of the ITW trays are the structural equivalents of the corner and central extensions shown in the specification and figures of the ‘904 patent. Also the trays “interengage” in the sense that the first and second stabilizing means of adjacent stacked trays pass by each other in essentially the same plane and capture and stabilize the integrated circuit component in the storage area during the inversion or flipping of the trays. However, in defending the ‘904 patent from ITW’s claim of obviousness, Murphy argues that the prior art trays, and the ‘562 tray in particular, differ from the ‘904 patent tray in an important respect.

The pocket formed by “central extensions” [of the ‘562 tray] is not the same size as the pocket on the other side of the tray formed by the “corner extensions.” When two such trays are stacked, these “extensions” do not align vertically, i.e., do not pass one another in essentially the same plane. . . . Thus, the “extensions” in the ‘562 tray . . . do not interengage as that term is used and defined in the ‘904 patent . . . and are not equivalent to the structures disclosed in the specification of the ‘904 patent for performing that function.

Murphy’s PFF&CL, at 63-64. The ITW trays either interengage or they do not. Murphy cannot have it both ways.

G. Accessible From Said First and Second Opposite Sides

⁴⁵Murphy’s PFF&CL, at 22-23.

⁴⁶Murphy’s PFF&CL, at 14.

As construed by ITW, the phrase “accessible from first and second opposite sides of said framework means,” 904 reex. patent, col. 3, ll. 66-67, means that access to the storage pocket area is unobstructed on both sides of the tray, permitting the unhindered inspection and testing of the integrated circuit component.⁴⁷ ITW’s reading is by no means implausible, as the word “accessible” is not defined in the ‘904 patent and, as ITW points out, in the few instances in which the word appears in the specification it does so in an inspection and testing context. Thus, ITW concludes that the limitation requires that “the storage pocket area be unobstructed on both sides in a tray system so that the component is capable of being completely inspected and tested from both sides when the component is between a pair of trays as the claims require.”⁴⁸

The problem with ITW’s proposed construction (as Murphy argues) is the absence of any claim language suggesting that devices or terminals be accessible in a pair of stacked trays (the “tray system”). Rather, the claim language requires that “each” tray (in the singular) be “accessible from first and second opposite sides of said framework means.” ‘904 reex. patent, col. 3., ll. 63, 66-67. Consequently, the court will adopt Murphy’s proposed definition that “[t]o be ‘accessible’ . . . , each storage pocket area must be adapted to receive an integrated circuit component from each side of the tray [in a terminals down position, or if the tray is inverted, in a terminals up orientation].”⁴⁹

H. “Central” and “Centrally”

⁴⁷ITW’s PFF&CL, at 75-76.

⁴⁸ITW’s PFF&CL, at 75.

⁴⁹Murphy Response, at 12.

ITW construes the term “central” and “centrally” to mean “a central element (recess or extension) to be found at or, at the least, very near the center of its associated wall means.”⁵⁰ Murphy construes the terms to mean “[b]etween or intermediate to the corner extensions, and not necessarily at the exact center of the wall means.”⁵¹ ITW relies primarily on English language dictionaries in construing the term. Cf. Phillips, 415 F.3d at 1322 (“[T]he use of the dictionary may extend patent protection beyond what should properly be afforded by the inventor’s patent.”). Murphy argues that ITW’s definition is too narrow. “[T]he line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court’s focus remains on understanding how a person of ordinary skill in the art would understand the claim terms. For instance, although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.” Phillips, 415 F.3d at 1323. Murphy argues that it would be evident to one skilled in the art that “central” extensions “can be anywhere along the wall, as long as they are located centrally with respect to, i.e., lie between, the corner extensions on the opposite side of an adjacent stacked tray.”⁵² The court will defer to Murphy’s construction, although without enthusiasm.

IV. INVALIDITY

A. Obviousness

⁵⁰ITW’s PFF&CL, at 83.

⁵¹MMHP, at 35.

⁵²Murphy’s Response, at 43.

A patent and each of its claims is presumed to be valid. 35 U.S.C. § 282. As a result, the patent challenger bears the burden of proving obviousness by clear and convincing evidence. SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp., 225 F.3d 1349, 1355 (Fed. Cir. 2000); Kahn v. General Motors Corp., 135 F.3d 1472, 1480 (Fed. Cir. 1998).

An invention cannot be patented if it is rendered obvious by prior art, that is, “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a). The issue of obviousness is a question of law informed by the court’s underlying factual determinations. Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966). The court is required to undertake four factual inquiries pursuant to Graham before invalidating a patent for obviousness. See Ruiz v. A.B. Chance Co., 234 F.3d 654, 662 (Fed. Cir. 2000) (vacating district court’s finding of invalidity for failure to sufficiently consider the Graham factors). Under Graham, the district court must consider “(1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) secondary considerations of nonobviousness, which . . . include commercial success, long-felt but unresolved need, failure of others, copying, and unexpected results.” Id. at 662-663, citing Graham, 383 U.S. at 17-18. The court will first consider Graham factors 1 and 3.⁵³

⁵³About the second of the Graham factors there is little to be said. Designing trays for storing integrated circuit components is a specialized art that caters to the needs of a cutting-edge technology. The designer must not only stay abreast of developments in the

B. The Prior Art

Prior art tray '562 is a BQFP (bumpered quad flat pack) tray sold for use with BGA chips.⁵⁴ The '562 tray has a framework means, a first support means consisting of four tabs next to the corner extensions in the four corners defined by the framework means and a second support means in the form of a floor surrounding each pocket. Prior art tray '562 has a first stabilizing means in the form of corner extensions located in each of the four corners defined by the framework means. The corner extensions extend above the support plane to restrain lateral movement of the device. The '562 tray has a second stabilizing means in the form of central extensions. The central extensions also extend above the support plane to restrain the device. The tray has a JEDEC chamfered corner. The '562 trays are stackable with aligning pockets, flipable, and they "interengage" or "interlock" when stacked.⁵⁵

chip manufacturing industry, but also be able to provide an appropriate tray almost simultaneously with the introduction of a new product.

⁵⁴The court credits Crisp's testimony that the '562 tray was offered for sale by Camtex/Horizons as a shipping container for BGA chips prior to October 15, 1992. Trial day 10 Tr. at 102-103, 104-105. Crisp was not only a convincing witness, but also participated in the creation of the design of the '562 tray while employed at Camtex in the early 1990's. *Id.* at 102. His testimony in this regard was wholly believable, not in small part because it was based on personal involvement with the development and sale of the original '562 tray.

⁵⁵As the description of the '562 tray suggests, the '904 patent is vulnerable under 35 U.S.C. §§ 102(a) and (g), in that the '562 tray would appear to contain all of the elements of the disputed claims of the '904 patent. If a prior art reference anticipates a patent claim by disclosing each and every limitation of the claimed invention (or if it inherently contains a missing characteristic), the patent is invalid. Schering Corp. v. Geneva Pharmaceuticals, 339 F.3d 1373, 1377 (Fed. Cir. 2003). I have chosen to proceed under § 103, as the "all elements" test of § 102 is met (ironically) only if one accepts Murphy's broad construction of terms like "interengaging" and "complementary

Prior art tray '526 is a wall-based TSOP (thin small outline package) tray capable of supporting a BGA chip in a terminals up or terminals down orientation. The '526 tray has a framework means, a first support means in the form of a small shelf projecting from the wall means and a second support means consisting of corner tabs. The tray has a first stabilizing means in the form of central extensions and a second stabilizing means in the form of corner extensions. It also has a chamfered corner. Like the '562 trays, the '526 trays interengage when stacked and are flipable.

The prior art 3M tray is a wall-based tray with a framework means, and a first and second support means consisting of tabs carried by the wall means. The 3M tray has a first stabilizing means, consisting of corner extensions and central recesses. The 3M tray, however, lacks a second stabilizing means. The four corners of the pocket are chamfered to facilitate the insertion of a device in the terminals-down orientation. The tray also has a chamfered corner. Because the 3M tray, like the '526 tray, is wall-based, the storage pocket area is fully accessible from the first and second opposite sides.⁵⁶

C. Differences Between the Prior Art and the Claimed Invention

In determining whether significant differences distinguish a claimed invention from

registration means for aligning.” While I have deferred to Murphy in this regard, I am not altogether comfortable with the result (which feeds into ITW’s “broadening” argument). It is therefore easier to rest an invalidity decision on obviousness as I find the '904 patent to be a simple reorganization of elements expressed in the '562, '526 and 3M trays. Murphy complains that Rod Crisp never referenced § 102 in his expert reports, which is true. I suspect, however, that the omission was deliberate, Mr. Crisp having made a judgment similar to the court’s about the overly-inclusive nature of Murphy’s claims construction.

⁵⁶According to Crisp, the '526 and 3M trays were also commercially available prior to October 15, 1992.

the prior art, “section 103 specifically requires consideration of the claimed invention ‘as a whole.’ Inventions typically are new combinations of existing principles or features.” Princeton Biochemicals, Inc. v. Beckman Coulter, Inc., 411 F.3d 1332, 1337 (Fed. Cir. 2005), citing Ruiz v. A.B. Chance Co., 357 F.3d 1270, 1275 (Fed. Cir. 2004). In making an obviousness analysis, a court must avoid falling prey to “the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.” In re Kotzab, 217 F.3d 1365, 1369 (Fed. Cir. 2000), quoting W.L. Gore & Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553 (Fed. Cir. 1983). “[T]he best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.” In re Gartside, 203 F.3d 1305, 1319 (Fed. Cir. 2000), quoting In re Dembiczak, 175 F.3d 994, 999 (Fed. Cir. 1999).

It is thus critical for the court to determine whether “there is something in the prior art as a whole *to suggest* the desirability, and thus the obviousness,” of combining different prior art elements to create the purported invention. Fromson v. Advance Offset Plate, Inc., 755 F.2d 1549, 1556 (Fed. Cir. 1985), quoting Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1462 (Fed. Cir. 1984). There is no requirement that the motivation to combine be found in the prior art references. The motivation to combine can be implicit in the knowledge generally available to one of ordinary skill in the art. In re Jones, 958 F.2d 347, 351 (Fed. Cir. 1992); In re Huston, 308 F.3d 1267, 1280 (Fed. Cir. 2002); In re Kotzab, 217 F.3d at 1370. “While [the Federal Circuit] indeed warns against employing hindsight, its counsel is just that – a warning. That

warning does not provide a rule of law that an express, written motivation to combine must appear in prior art references before a finding of obviousness. Stated differently, . . . a court or examiner may find a motivation to combine prior art references in the nature of the problem to be solved. . . . This form of motivation to combine evidence is particularly relevant with simpler mechanical technologies.” Ruiz, 357 F.3d at 1276.

I find little difference between the ‘904 patent and the prior art. The prior art, tweaked with minor and obvious modifications, anticipates all of the essential elements of the ‘904 patent as Murphy defines them. It might well have been possible to construe the ‘904 patent in ways that suggest true novelty. The most arguably innovative aspect of the ‘904 tray is its “keying feature,” the bosses and receptacles that prevent the misorientation of the trays when being stacked. But because the ITW trays have no equivalent structure performing that function, Murphy was forced to concede the innovation and argue that the complementary registration means has nothing to do with proper orientation, but is associated only with the more mundane function of enabling the stacking relationship.⁵⁷

⁵⁸ In similar fashion, Murphy surrenders other desirable innovations of the ‘904 design, such as the ability of a continuous wall surface created by the meshing of the central

⁵⁷I am inclined to disagree with Murphy that proper alignment is not a function described in the ‘904 patent. The specification clearly states that the complementary registration means has the function of aligning the first and second trays in the stacked relationship so that corresponding storage pocket areas mirror one another. ‘904 patent, col. 4, ll. 33-35.

⁵⁸Murphy appropriately concedes that it cannot claim an industry-developed standard like the JEDEC chamfered corner as its own invention.

extensions and recesses to fully protect the inserted component,⁵⁹ and the ability of unobstructed access from both sides of the tray system to facilitate the testing and inspection of the chip.

Persons of ordinary skill in the art of tray-making know that they must adapt their tray designs quickly to accommodate new innovations in integrated circuit design; they are therefore highly motivated to update their trays to remain competitive in the tray-making industry. The most efficient means of doing so is by “adding value” to existing tray designs by incorporating features from one product line into another. A person of ordinary skill in the art would have been motivated in 1992 to look to and combine elements of prior art trays ‘562, ‘526, and 3M to create new trays to house BGA chips. A tray-maker of ordinary skill in the art looking to create a flipable stackable tray would simply have taken the upwardly extending extensions (the second stabilizing means) from the ‘526 and ‘562 trays and inserted them in the 3M tray (essentially the solution claimed by Miks and Robert Murphy). This solution to the flipability “problem” (assuming that one existed) was obvious. Accordingly, ITW has met its burden of establishing a prima facie case of invalidity under § 103 by clear and convincing evidence. See Winner Int’l Royalty Corp. v. Wang, 202 F.3d 1340, 1350 (Fed. Cir. 2003).

D. Secondary Factors

The court now considers Murphy’s argument that even if a prima facie case of obviousness has been made, secondary factors support a finding of non-obviousness. As

⁵⁹Thomas Solon agreed that a continuous wall surface provides “maximum security” for a chip when trays are stacked.

Graham requires, the court will consider the factors of commercial success, long-felt need, the failure of others, copying, and unexpected results. As to the first factor, Murphy has not made a showing of commercial success. A “‘nexus must be established between the merits of the claimed invention and evidence of commercial success before that evidence may become relevant to the issue of obviousness.’” Iron Grip Barbell Co. v. USA Sports, Inc., 392 F.3d 1317, 1324 (Fed. Cir. 2004), quoting Solder Removal Co. v. USITC, 582 F.2d 628, 637 (C.C.P.A. 1978). The “nexus may be inferred when ‘the patentee shows both that there is commercial success, and that the thing (product or method) that is commercially successful is the invention disclosed and claimed in the patent.’” Id., quoting Demaco Corp. v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 1392 (Fed. Cir. 1988). The only evidence of commercial success Murphy offers is its licensing program. However, there are no domestic (U.S. based) licensees of the ‘904 patent. Nor did Murphy offer evidence of the number of its foreign licensees, the volume of business they represent, or their reasons for licensing the ‘904 patent. “Our cases specifically require affirmative evidence of nexus where the evidence of commercial success presented is a license, because it is often ‘cheaper to take licenses than to defend infringement suits.’” Id., 392 F.3d at 1324, quoting EWP Corp. v. Reliance Universal Inc., 755 F.2d 898, 908 (Fed. Cir. 1985). “Without a showing of nexus, ‘the mere existence of . . . licenses is insufficient to overcome the conclusion of obviousness’ when there is a strong prima facie case of obviousness.” Id., 392 F.3d at 1324, quoting SIBIA Neurosciences, 225 F.3d at 1358.

Murphy presented no evidence of a long-felt need or failure by others. Here, the

need for a flipable tray that would support BGA chips in a terminals up or terminals down orientation was resolved almost simultaneously with the introduction of BGA chips into the market. “Absent a showing of long-felt need or the failure of others, the mere passage of time without the claimed invention is not evidence of nonobviousness.” Id., 392 F.3d at 1325.

Copying by a competitor is also a relevant consideration in the Graham secondary factor analysis. Id. But “[n]ot every competing product that arguably falls within the scope of a patent is evidence of copying. Otherwise every infringement suit would automatically confirm the nonobviousness of the patent. Rather, copying requires the replication of a specific product. This may be demonstrated either through internal documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a virtually identical replica, or access to, and substantial similarity to, the patented product (as opposed to the patent).” Id., quoting Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc., 344 F.3d 1186, 1196-1197 (Fed. Cir. 2003). See also Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1285 (Fed. Cir. 2000); Cable Elec. Prods., Inc. v. Genmark, Inc., 770 F.2d 1015, 1027 (Fed. Cir. 1985), *overruled on other grounds by* Midwest Indus., Inc. v. Karavan Trailers, Inc., 175 F.3d 1356, 1359 (Fed. Cir. 1999) (en banc). There is no persuasive evidence offered by Murphy that ITW engaged in copying, particularly given the fact that almost all of what is claimed to be innovative in the ‘904 patent had been marketed by ITW in the prior art ‘562 tray, among others, before the ‘904 patent’s effective filing date.

Because Murphy has not presented sufficient evidence of commercial success,

satisfaction of a long-felt but unresolved need, the failure of others or copying, the court concludes that Murphy has failed to rebut the showing of obviousness. The court will therefore hold that the '904 patent claims at issue are invalid under 35 U.S.C. § 103 as obvious in the light of the prior art.⁶⁰

V. CONCLUSION

In determining the claims obvious, I have adopted (with some reservation) Murphy's construction of the claims in their entirety. I have done so because the result confirms my fundamental opinion about the prosecution of this patent. In its effort to stretch the claims of the '904 patent to capture the progeny of ITW's '562 tray, Murphy has been forced to construe the claims so broadly as to sweep into its proffered definitions virtually all of the elements of the '562 tray and most of those of the '526 and 3M trays (thereby rendering the '904 patent obvious).

For the sake of completeness, I will briefly address ITW's claim of noninfringement.

⁶⁰I find strong similarities between this case and B.F. Goodrich Co. v. Aircraft Braking Sys. Corp., 72 F.3d 1577, 1583 (Fed. Cir. 1996).

The district court also analyzed the secondary considerations presented by BFG. It did not find that they overcame the strong teachings of the prior art. The assertion of "long-felt need" was discounted because the BFG invention was similar to the teachings of Dunlop. The failure of others was not found to be significant because there was only a brief time period during which manufacturers sought a solution to the problem of increased carbon utilization in aircraft brakes. Only slight evidence of skepticism by others was presented. Copying by others was not found to be compelling because there was no extensive development by competitors, and a noninfringing substitute was easily designed. The advantages of the invention were not found to be necessarily unexpected given the state of the prior art. Finally, the district court found that the evidence of commercial success was ambiguous.

The argument that the ITW trays incorporate a floor rather than a wall-based design, where the support and stabilizing features are supported by a floor rather than a wall, finds support in a visual comparison of the accused trays with the figures of the '904 patent.⁶¹ A significant consequence, which reflects well on the Murphy design, is that the floor of the ITW trays obstructs access to both sides of the component, making it more difficult to inspect and test the chip.⁶² In sum, were I not to construe the claims of the '904 patent as obvious based on Murphy's own definitions of its claims, I would be inclined to find an absence of infringement. Murphy has not identified an ITW tray that incorporates either of the two features of the '904 patent that I believe are arguably worthy of patent protection – the wall means that support the structures stabilizing and protecting the chip and the bosses and receptacles that prevent the misalignment of the trays.⁶³

ORDER

For the foregoing reasons, having determined that the claims of the '904 patent are invalid for obviousness, the court will order that judgment enter for ITW on the claims of infringement. The court will also order the entry of judgment for ITW on the defamation

⁶¹Were I not persuaded that the '904 patent is invalid for obviousness, I would be inclined to find non-infringement based on the distinction between a floor-based (ITW) and wall-based (Murphy) tray design. Murphy's expert, Thomas Solon, came very close to conceding the materiality of this difference in his testimony.

⁶²The superiority of the Murphy design in this regard is further evidence of the likelihood of noninfringement. An infringer usually seeks to copy the innovative aspects of a competitor's invention, and not just its obvious components.

⁶³ITW also stresses the fact that the stabilizing means of its trays do not interengage or "mesh" in the interlocking sense to form a continuous wall surface as does the embodiment disclosed in the '904 patent.

claim. As the prevailing party, ITW will submit a proposed order for final judgment within twenty (20) days of the date of this Order.

SO ORDERED.

/s/ Richard G. Stearns

UNITED STATES DISTRICT JUDGE

APPENDIX

The claims at issue are as follows:

Claim 7:

A tray system for storing a *plurality of ball grid array integrated circuit components, each integrated circuit component having a planar housing with parallel terminal and other sides defining component edges and an array of ball terminals located on the terminal side of the housing in predetermined positions, said tray system including first and second trays each of which comprises:*

A. framework means for defining a storage pocket area for each integrated circuit component, said storage pocket area being accessible from first and second opposite sides of said framework means,

B. first support means carried by said framework means in each said storage pocket area for defining a first support plane for engaging the terminal side of the integrated circuit component when the integrated circuit component is inserted into said storage pocket area from said first side of said framework means,

C. second support means carried by said framework means in each said storage pocket area for defining a second support plane that is parallel to the first support plane for engaging the other side of the integrated circuit component when the integrated circuit component is inserted into said storage pocket area from said second side of said framework means,

D. Means for enabling the stacking of said first and second trays with aligned corresponding storage pocket areas,

E. first stabilizing means of said framework means at said first support plane for stabilizing the position of the integrated circuit component inserted from the first side of said framework means onto said first support means,

F. second stabilizing means of said framework means at said second support plane for stabilizing the position of the

integrated circuit component inserted from the second side of said framework means onto said second support means whereby said first and second trays in the tray system capture the integrated circuit component therebetween and said first and second stabilizing means of said stacked first and second trays interengage to stabilize the position of the integrated circuit component transverse to said framework means within said storage pocket area, and

G. first and second complementary registration means for aligning said first and second trays in *the* stacked relationship.

Claim 9:

A tray system for storing integrated circuit components as recited in claim 7 wherein *said stabilizing means include a plurality of intersecting wall means for defining the limits of said storage pocket area wherein said wall means include corner extensions at each intersection of said wall means extending perpendicularly to one side of the first and second support planes and defining a central recess therebetween and central extensions located centrally of each said wall means and extending perpendicularly to other side of the first and second support planes whereby said central extensions of one of the stacked first and second trays interengage with the corner extensions of the other of said stacked first and second trays.*

Claim 11:

A tray system for storing *a plurality of ball grid array* integrated circuit components, *each integrated circuit component having a planar housing with parallel terminal and other sides defining component edges and an array of ball terminals located on the terminal side of the housing in predetermined positions, said tray system including first and second trays each of which comprises:*

A. *framework means for defining a storage pocket area for each integrated circuit component, said storage pocket area being accessible from first and second opposite sides of said framework means,*

B. *first support means carried by said framework means in each said storage pocket area for defining a first support plane for engaging the terminal side of the integrated circuit component when the integrated circuit component is inserted*

into said storage pocket area from said first side of said framework means,

C. second support means carried by said framework means in each said storage pocket area for defining a second support plane that is parallel to the first support plane for engaging the other side of the integrated circuit component when the integrated circuit component is inserted into said storage pocket area from said second side of said framework means,

D. means for enabling the stacking of said first and second trays with aligned corresponding storage pocket areas,

E. second stabilizing means formed with said framework means at said second support plane for stabilizing the position of the integrated circuit component inserted from the second side of said framework means onto said second support means whereby said first and second trays in the tray system capture the integrated circuit component therebetween and wherein said first and second stabilizing means on each said stacked first and second trays interengage to stabilize the position of the integrated circuit component transverse to said framework means within said corresponding storage pocket area and wherein said first and second stabilizing means include a plurality of intersecting walls means for defining the limits of a storage pocket area and wherein one of said first and second stabilizing means includes corner extensions at each intersection of said wall means extending perpendicularly to one side of the first and second support planes and central recesses between said corner extensions and the other of said first and second stabilizing means includes central extensions located centrally of each said wall means and extending perpendicularly to the other side of the first and second support planes whereby said corner extensions and said central extensions stabilize the integrated circuit component and whereby said central extensions of one of the stacked first and second trays are adapted to be received in said central recesses of the other tray to interengage with the corner extensions of the other of said stacked first and second trays.

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1:98-cv-10774-RGS R.H. Murphy Co., Inc v. Illinois Tool Works
Richard G. Stearns, presiding
Date filed: 05/04/1998 Date of last filing: 12/29/2005

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